

Please amend page 20, line 1 as follows:

Claims What is claimed is:

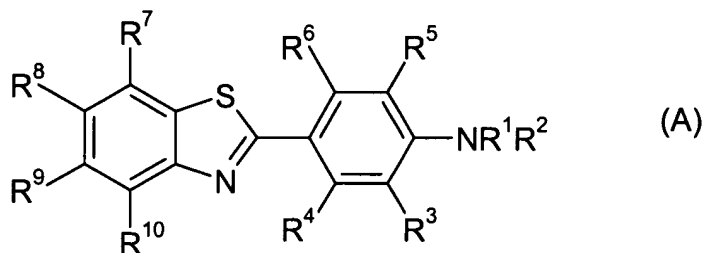
This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A process for the production of an ^{18}F -labelled tracer which comprises treatment of a solid support-bound precursor of formula (I)

SOLID SUPPORT-LINKER- X -TRACER (I)

wherein X is a group which promotes nucleophilic substitution at a specific site on the attached TRACER and the TRACER is of formula (A)



wherein:

R¹ and R² are independently selected from hydrogen, a protecting group, C₁₋₆ alkyl, C₁₋₆ hydroxyalkyl, and C₁₋₆ haloalkyl;

R³ to R¹⁰ are independently selected from hydrogen, halo, C₁₋₆ alkyl, C₁₋₆ haloalkyl, C₁₋₆ hydroxyalkyl, C₁₋₆ alkoxy, C₁₋₆ haloalkoxy, hydroxy, cyano, and nitro;

and one of the groups R¹ to R¹⁰ is bonded to the SOLID SUPPORT-LINKER-X -;

with $^{18}\text{F}^-$ to produce the labelled tracer of formula (II)

^{18}F -TRACER (II)

wherein the TRACER is as defined for the compound of formula (I) except that one of the groups R^1 to R^{10} is bonded to the ^{18}F instead of to the SOLID SUPPORT-LINKER-X – in formula (I);

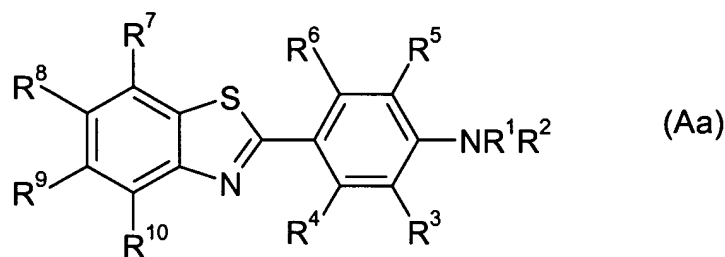
optionally followed by:

- (i) removal of excess $^{18}\text{F}^-$, for example by ion-exchange chromatography; and/or
- (ii) removal of any protecting groups; and/or
- (iii) removal of organic solvent; and/or
- (iv) formulation of the resultant compound of formula (II) as an aqueous solution

2. (Original) A process according to claim 1 which comprises treatment of a solid support-bound precursor of formula (Ia):

SOLID SUPPORT-LINKER-SO₂-O -TRACER (Ia)

wherein the TRACER is of formula (Aa)



wherein:

R^1 and R^2 are independently selected from hydrogen, a protecting group, C₁₋₆ alkyl, C₁₋₆ hydroxyalkyl, and C₁₋₆ haloalkyl;

R^3 to R^{10} are independently selected from hydrogen, halo, C₁₋₆ alkyl, C₁₋₆ haloalkyl, C₁₋₆ hydroxyalkyl, C₁₋₆ alkoxy, C₁₋₆ haloalkoxy, hydroxy, cyano, and nitro;

in which either (a) an R^1 C₁₋₆ alkyl group or (b) an R^3 to R^{10} C₁₋₆ alkyl or C₁₋₆ alkoxy group is bonded to the SOLID SUPPORT-LINKER-SO₂-O – in formula (Ia);

with $^{18}\text{F}^-$ to produce the labelled tracer of formula (IIa)

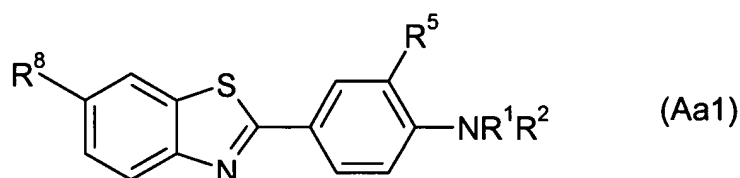
¹⁸F-TRACER (IIa)

wherein the TRACER is as defined for the compound of formula (Ia) except that either (a) an R¹ C₁₋₆ alkyl group or (b) an R³ to R¹⁰ C₁₋₆ alkyl or C₁₋₆ alkoxy group is bonded to the ¹⁸F instead of to the SOLID SUPPORT-LINKER-SO₂-O – in formula (Ia);

optionally followed by:

- (i) removal of excess ¹⁸F⁻, for example by ion-exchange chromatography; and/or
- (ii) removal of any protecting groups; and/or
- (iii) removal of organic solvent; and/or
- (iv) formulation of the resultant compound of formula (IIa) as an aqueous solution.

3. (Original) A process according to claim 2 wherein the TRACER is of formula (Aa1)



wherein

R¹ and R² are independently selected from hydrogen, a protecting group, C₁₋₆ alkyl, C₁₋₆ hydroxyalkyl, and C₁₋₆ haloalkyl;

R⁵ is hydrogen or C₁₋₆ alkyl,

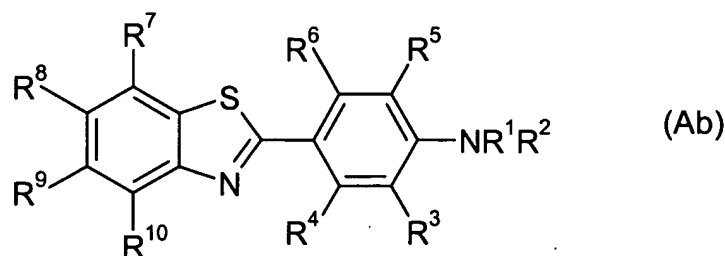
R⁸ is hydroxy, C₁₋₆ alkoxy, C₁₋₆ haloalkyl, or C₁₋₆ alkyl;

provided that one of R¹, R⁵ and R⁸ is C₁₋₆ alkyl bonded to the SOLID SUPPORT-LINKER-SO₂-O – in formula (Ia) or R⁸ is C₁₋₆ alkoxy bonded to the SOLID SUPPORT-LINKER-SO₂-O – in formula (Ia).

4. (Original) A process according to claim 1 which comprises treatment of a solid support-bound precursor of formula (Ib)



wherein Y⁻ is an anion and the TRACER is of formula (Ab)



wherein:

R^1 and R^2 are independently selected from hydrogen, a protecting group, C_{1-6} alkyl, C_{1-6} hydroxyalkyl, and C_{1-6} haloalkyl;

one of R^3 to R^{10} is a bond to the SOLID SUPPORT-LINKER- I^+ group in formula (Ib) and the others are independently selected from hydrogen, halo, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, hydroxy, cyano, and nitro;

with $^{18}F^-$ to produce the labelled tracer of formula (IIb)

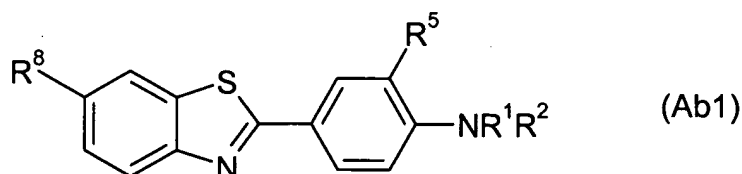
^{18}F -TRACER (IIb)

wherein the TRACER is as defined for the compound of formula (Ib) except that one of R^3 to R^{10} is a bond to the ^{18}F instead of a bond to the SOLID SUPPORT-LINKER- I^+ group in formula (Ib);

optionally followed by:

- (i) removal of excess $^{18}F^-$, for example by ion-exchange chromatography; and/or
- (ii) removal of any protecting groups; and/or
- (iii) removal of organic solvent; and/or
- (iv) formulation of the resultant compound of formula (IIb) as an aqueous solution.

5. (Original) A process according to claim 4 wherein the TRACER is a compound of formula (Ab1)



wherein:

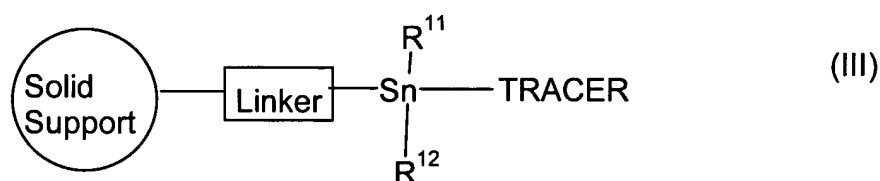
R^1 and R^2 are independently selected from hydrogen, a protecting group, C_{1-6} alkyl, C_{1-6} hydroxyalkyl, and C_{1-6} haloalkyl;

R^5 is hydrogen, C_{1-6} alkyl, or a bond to the SOLID SUPPORT-LINKER- I^+ group in formula (Ib);

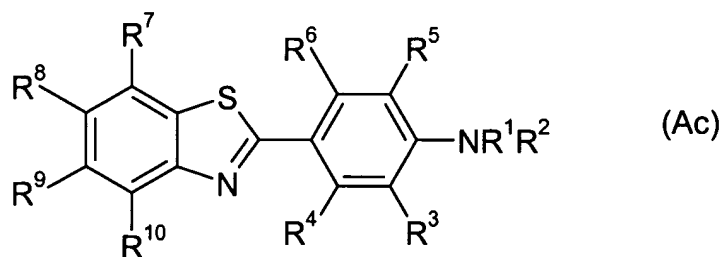
R^8 is hydroxy, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{1-6} alkyl, or a bond to the SOLID SUPPORT-LINKER- I^+ group in formula (Ib);

provided that only one of R^5 and R^8 is a bond to the SOLID SUPPORT-LINKER- I^+ group in formula (Ib).

6. (Original) A process for the production of an ^{18}F -labelled tracer which comprises treatment of a solid support-bound precursor of formula (III):



wherein R^{11} and R^{12} are independently selected from C_{1-6} alkyl and the TRACER is a compound of formula (Ac):



wherein:

R^1 and R^2 are independently selected from hydrogen, a protecting group, C_{1-6} alkyl, C_{1-6} hydroxyalkyl, and C_{1-6} haloalkyl;

one of R^3 to R^{10} is a bond to the Sn in formula (III) and the others are independently selected from hydrogen, halo, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxy, C_{1-6} haloalkoxy, hydroxy, cyano, and nitro;

with a source of ^{18}F , suitably $^{18}F_2$, $^{18}F-CH_3COOF$ or $^{18}F-OF_2$;

to give the labelled tracer of formula (IV);

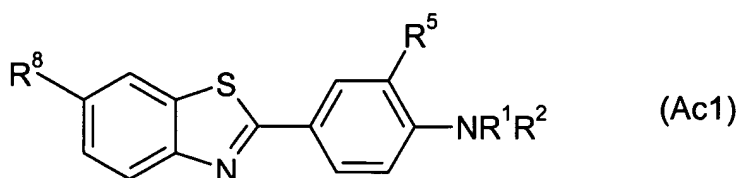
^{18}F -TRACER (IV)

wherein the TRACER is as defined for the compound of formula (III) except that one of R^3 to R^{10} is a bond to the ^{18}F instead of a bond to the Sn in formula (III);

optionally followed by:

- (i) removal of excess fluorinating agent and $^{18}F^-$ ions produced in the generation of the fluorinating agent or in the reaction; and/or
- (ii) removal of any protecting groups; and/or
- (iii) removal of organic solvent; and/or
- (iv) formulation of the resultant compound of formula (IV) as an aqueous solution.

7. (Original) A process according to claim 6 in which the TRACER is suitably a compound of formula (Ac1)



wherein:

R^1 and R^2 are independently selected from hydrogen, a protecting group, C_{1-6} alkyl, C_{1-6} hydroxyalkyl, and C_{1-6} haloalkyl;

R^5 is hydrogen, C_{1-6} alkyl, or a bond to the Sn in formula (III);

R^8 is hydroxy, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{1-6} alkyl, or a bond to the Sn in formula (III);

provided that only one of R^5 and R^8 is a bond to the Sn in formula (III).

8. (Currently amended) A process for the preparation of a ^{18}F -labelled tracer of formula (II), (IIa), (IIb), or (IV), according to ~~any one of claims 1 to 7~~claim 1, for use in PET.

9. (Currently amended) A compound of formula (I), (Ia), (Ib), (III) as defined in ~~any one of claims 1 to 7~~claim 1.

10. (Currently amended) A radiopharmaceutical kit for the preparation of an ^{18}F -labelled tracer for use in PET, which comprises:

- (i) a vessel containing a compound of formula (I), (Ia), or (Ib) as defined in ~~any one of claims 1 to 5~~claim 1; and
- (ii) means for eluting the vessel with a source of $^{18}\text{F}^-$;
- (iii) an ion-exchange cartridge for removal of excess $^{18}\text{F}^-$; and optionally
- (iv) a cartridge for solid-phase deprotection of the resultant product of formula (II), (IIa), or (IIb) as defined in ~~any one of claims 1 to 5~~claim 1.

11. (Currently amended) A cartridge for a radiopharmaceutical kit for the preparation of an ^{18}F -labelled tracer for use in PET which comprises:

- (i) a vessel containing a compound of formula (I), (Ia), or (Ib) as defined in ~~any one of claims 1 to 5~~claim 1; and
- (ii) means for eluting the vessel with a source of $^{18}\text{F}^-$.

12. (Currently amended) A radiopharmaceutical kit for the preparation of of an ^{18}F -labelled tracer for use in PET, which comprises:

- (i) a vessel containing a compound of formula (III) as defined in claim 6 ~~or 7~~; and
- (ii) means for eluting the vessel with a source of ^{18}F ; and optionally
- (iii) a cartridge for removal of excess fluorinating agent and $^{18}\text{F}^-$ ions; and optionally
- (iv) a cartridge for solid-phase deprotection of the resultant product of formula (IV) as defined in claim 6 ~~or 7~~.

13. (Currently amended) A cartridge for a radiopharmaceutical kit for the preparation of an ^{18}F -labelled tracer according to claim 12 for use in PET which comprises:

- (i) a vessel containing a compound of formula (III) as defined in claim 6 ~~or 7~~ ; and
- (ii) means for eluting the vessel with a source of ^{18}F .

14. (Currently amended) A method for obtaining a diagnostic PET image which comprises the step of using a radiopharmaceutical kit according to claim 10 ~~or 12~~ or a cartridge for a radiopharmaceutical kit according to claim 11 ~~or 13~~.